

# MATERIAL SAFETY DATA SHEET



## EMPIRE\* 20 MICROENCAPSULATED INSECTICIDE

Emergency Phone: 800-992-5994  
Dow AgroSciences LLC  
Indianapolis, IN 46268

Effective Date: 12/14/98  
Product Code: 13042  
MSDS: 2481

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Empire\* 20 Microencapsulated Insecticide

#### COMPANY IDENTIFICATION:

Dow AgroSciences  
9330 Zionsville Road  
Indianapolis, IN 46268-1189

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

Chlorpyrifos: O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate	CAS # 002921-88-2	20%
Inert Ingredients, Total, Including Petroleum Solvent		80%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR) 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

### 3. HAZARDOUS IDENTIFICATIONS:

#### EMERGENCY OVERVIEW

Hazardous chemical. Off-white liquid with a musty odor. musty odor. LD<sub>50</sub> for skin absorption in rabbits is >10,000 mg/kg. Oral LD<sub>50</sub> for rats is >25,000 mg/kg. Cholinesterase inhibitor. Toxic to fish, birds, wildlife, and aquatic organisms.

**EMERGENCY PHONE NUMBER:** 800-992-5994

**POTENTIAL HEALTH EFFECTS:** This section includes possible adverse effects which could occur if this material is not handled in the recommended manner.

**EYE:** Essentially non-irritating to the eyes.

**SKIN:** Prolonged contact is essentially non-irritating to the skin. Did not cause allergic skin reactions when tested in guinea pigs. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD<sub>50</sub> for skin absorption in rabbits is >10,000 mg/kg.

**INGESTION:** Single dose oral toxicity is extremely low. The oral LD<sub>50</sub> for rats is >25,000 mg/kg. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

**INHALATION:** Vapors are unlikely due to physical properties.

#### SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Excessive exposure to chlorpyrifos may produce organophosphate type cholinesterase inhibition. Chlorpyrifos produced mild adrenal effects when fed to rats, but only at doses that greatly exceeded any exposures that would be received during use of this product. Excessive exposure to the solvent may cause respiratory irritation and central nervous system depression. Materials are encapsulated in the product and are not expected to be released under normal use conditions or foreseeable emergency.

**CANCER INFORMATION:** Chlorpyrifos did not cause cancer in laboratory studies.

**TERATOLOGY (BIRTH DEFECTS):** Chlorpyrifos did not cause birth defects; other fetal effects occurred only at doses toxic to the mother.

**REPRODUCTIVE EFFECTS:** Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the off-spring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

### 4. FIRST AID:

**EYES:** Flush with plenty of water for 5 minutes.

**SKIN:** Wash thoroughly with soap and water.

**INGESTION:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

**INHALATION:** Remove to fresh air if effects occur. Consult a physician.

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**NOTE TO PHYSICIAN:** Chlorpyrifos is a cholinesterase inhibitor. Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/ pralidoxime, may be therapeutic if used early; however, use only in conjunction with atropine. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician.

### 5. FIRE FIGHTING MEASURES:

**FLASH POINT:** >200°F @ 763 mm Hg  
**METHOD USED:** Closed Cup

### FLAMMABLE LIMITS

LFL: None  
UFL: None

**EXTINGUISHING MEDIA:** Water fog, foam, CO<sub>2</sub>, dry chemical

**FIRE AND EXPLOSION HAZARDS:** Does not burn.

**FIRE-FIGHTING EQUIPMENT:** Wear positive pressure, self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES:

**ACTION TO TAKE FOR SPILLS/LEAKS:** Sweep up into plastic bags using sweeping compound. Report large spills to Dow AgroSciences on 800-992-5994.

### 7. HANDLING AND STORAGE:

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Store in original container in secured dry storage area. Prevent cross-contamination with other pesticides or fertilizers. Do not store above 122°F for extended periods of time. Preferred storage is above 32°F. Storage below 32°F may result in solidification. If warmed to above 32°F, product will return to original form. Freezing does not adversely affect this product. Keep out of reach of children. Avoid contact with eyes and skin. Do not ingest this product.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions with a high potential for exposure. If handling procedures are such that there is only a low potential for exposure, less protection may be needed. Emergency conditions may require additional precautions.

**EXPOSURE GUIDELINE(S):** Chlorpyrifos: ACGIH TLV and OSHA PEL are 0.2 mg/M<sup>3</sup>, Skin. PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

**ENGINEERING CONTROLS:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

**RESPIRATORY PROTECTION:** Atmospheric levels should be maintained below the exposure guideline.

**SKIN PROTECTION:** No precautions other than clean body-covering clothing should be needed.

**EYE PROTECTION:** Use safety glasses.

### 9. PHYSICAL AND CHEMICAL PROPERTIES:

**BOILING POINT:** 212°F (100°C\*\*)  
**VAPOR PRESSURE:** 17.5 mmHG @ 20°C\*\*  
**VAPOR DENSITY:** <1\*\*  
**SOLUBILITY IN WATER:** Disperses in water  
**SPECIFIC GRAVITY:** 1.0410 @ 20°C  
**pH:** 9.3 (9.9% mixture in water)  
**APPEARANCE:** Off-white liquid  
**ODOR:** Musty odor  
\*\*Data for water

\*Trademark of Dow AgroSciences

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### 10. STABILITY AND REACTIVITY:

**STABILITY:** (CONDITIONS TO AVOID) Avoid heating above 50°C for extended periods -- loss of active ingredient may result.

**INCOMPATIBILITY:** (SPECIFIC MATERIALS TO AVOID) Bases.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen chloride, ethyl sulfide, diethyl sulfides, nitrogen oxides.

**HAZARDOUS POLYMERIZATION:** Not known to occur.

### 11. TOXICOLOGICAL INFORMATION:

**MUTAGENICITY:** Based on a majority of negative data and some equivocal or marginally positive results, chlorpyrifos is considered to have minimal mutagenic potential.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE

**MOVEMENT & PARTITIONING:** Based largely or completely on information for chlorpyrifos. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Expected to be relatively immobile in soil (Koc >5000).

**DEGRADATION & PERSISTENCE:** Based largely or completely on information for chlorpyrifos. The photolysis half-life in water is 3-4 weeks. Tropospheric half-life is estimated to be 1.4 hours. Degradation is expected in the soil environment within days to weeks. Under aerobic soil conditions the half-life is generally 30-60 days.

**ECOTOXICOLOGY:** Based largely or completely on information for chlorpyrifos. Material is very highly toxic to aquatic organisms on an acute basis (LC<sub>50</sub>/EC<sub>50</sub> <0.1 mg/L in most sensitive species). Material is highly toxic to birds on a dietary basis (LC<sub>50</sub> between 50 and 500 ppm). Material is moderately toxic to birds on an acute basis (LD<sub>50</sub> between 51 and 500 mg/kg).

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** Do not contaminate food, feed, or water by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. Pesticide, spray mixture, or rinse water that cannot be used according to label instructions, must be disposed of in accordance with applicable local, state or federal requirements.

### 14. TRANSPORT INFORMATION:

For DOT regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow AgroSciences representative.

### 15. REGULATORY INFORMATION:

**NOTICE:** The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

#### U.S. REGULATIONS

**SARA 313 INFORMATION:** To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

**SARA HAZARD CATEGORY:** This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

A delayed health hazard

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**STATE RIGHT-TO-KNOW:** The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
CHLORPYRIFOS	002921-88-2	NJ3 PA1 PA3

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).  
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).  
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

**OSHA HAZARD COMMUNICATION STANDARD:** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND):** This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
CHLORPYRIFOS	002921-88-2	1	20%

### 16. OTHER INFORMATION:

**MSDS STATUS:** Revised Sections 3,4,6,7,10,12 & 14  
Changed Company Name and  
Emergency Telephone Number  
Reference: DR-0275-9708  
Replaces MSDS Dated: 10/24/96  
Document Code: D03-022-001  
Replaces Document Code: D03-013-042

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult Dow AgroSciences For Further Information.